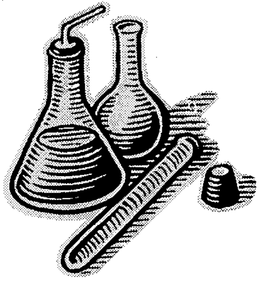


The reACT$_2$ant

fall 2006

Volume 14 Issue #1

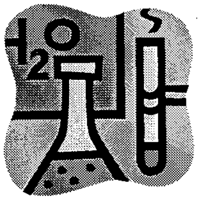
Heading

This fall, as always, is full of exciting Chemistry-laden opportunities for you and your students. There are the traditional events you can use to spark enthusiasm in your classroom such as Mole Day or National Chemistry Week or perhaps a day of Halloween demos. Even if your scope and sequence doesn't include the mole yet (or at all, based on the TEKS), you can use Mole Day as a great way to introduce the idea of counting by weighing and the magnitude of Avogadro's number. National Chemistry Week's focus on the home can prompt some interesting exploration of materials we use in, on and under our homes. If you have access to the *Journal of Chemical Education*, the October issue (P.1435) has a power point, "Chemical Bonding Makes a Difference," you can download which looks at covalent bonding, and by extension, polymers.

In addition, there are some powerful professional growth experiences to boost your teaching to a whole new atmospheric level. Houston area folks can take advantage of SWRM whereas those further north can head up to CAST in Wichita Falls. As always, the booth will be busy and we'll need volunteers to help – please contact Rhonda Alexander rhondaa@cox-internet.com. Melissa Jones has discovered a new chemistry toy we hope to unveil at the booth and the beautiful ChemEd07 Texas quarter pins will be available too. This year Friday will have a full day of Chemistry offerings including a session at 1:00 entitled Chem Net which will be a discussion session of various exothermic topics – AP changes, graduation changes, the future of IPC and TAKS – to name a few possibilities. Come and share your thoughts!

Finally, in this issue I wanted to provide something that might prove helpful. Most of us hate missing school, but there are occasional emergencies that we can't foresee and times we can't make coherent lesson plans for the day. My new school (that's right, I'm at a new school after 19 years) requires each teacher to have at least 2 emergency sub plans ready for just such a moment. I've included one of mine – a lab that I got somewhere, but I don't know where. If you have a great sub lesson to share, please email it and I'll include it in a future edition!

Place your message here. For maximum impact, use two or three sentences.



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President's Corner

Hello to all ACT_2 members, I trust your year is off to a great start. There are a couple of things that bring caution to mind. Last May I read an article in the Ft. Worth Star Telegram saying that the State Legislature wants to do away with the State Board of Education (SBOE). One of the responsibilities of the SBOE is handling money gained by the state from gas and oil royalties and termed the Permanent School fund. This fund is currently over $20 billion dollars and is not touched by that committee - only the interest is used to buy books for students and ancillaries for teachers. Only 1 cent of each tax dollar is used for books. Can you imagine the delight that the Legislature will have if they pull this off? Please write (snail mail) to your representatives and let them know your desires and

Treasurer's Report 9/11/06	
Starting Balance	**$5184.70**
Income *(dues, sponsorship, interest, etc.)*	$4414.22
Expenses *(mugs, newsletter, CAST booth, awards, etc.)*	$2471.24
Ending Balance	**$7127.24**
Actinium Fund	*$ 752.00*

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More Presidential and Board News

by js

thoughts. Kent Grusendorf, the former Education Committee Chairman from Arlington, was defeated at the primary level by Diane Patrick who has previously served on the SBOE.

The second issue is concerning the newly voted requirement of four years of science credit for a Recommended or Distinguished graduation plan. STAT and all of its affiliates voted to send a Position Statement to SBOE and the Legislature to retain IPC. This statement did not support allowing Computer Science as one of its possible courses to be substituted in for the fourth year of science. Again, write your SBOE representative and tell them your thoughts.

Have a good year, and we hope to see all of you at CAST.

Dale Moore

Executive Board News

The Executive Board would like to propose the following Constitutional Change regarding ARTICLE V. BOARD OF DIRECTORS. Currently the Constitution reads "The Board of Directors shall consist of the Executive Board and the representatives from the [six] designated regions in Texas."

The Board recommends that the number [six] be omitted since Regional Directors serve at the invitation of the Board and their location can vary depending upon the needs of the organization as well as current professional assignments. This proposal will be voted by the membership during the business portion of the ACT$_2$ luncheon at CAST.

Period	Group 18
1	2 He
2	10 Ne
3	18 Ar
4	36 Kr
5	54 Xe
6	86 Rn
7	118 Uuo

Helium and Argon

By Dr. Jim Marshall, UNT

Argon and helium, like all of the noble gases, were discovered through spectroscopy. The French astronomer Pierre-Jules-Cesar Janssen observed an unfamiliar yellow line in the spectrum during a solar eclipse in 1968. Astronomer Sir Norman Lockyer confirmed the line did not belong to any known element and he named it helium (Gr. Helios , sun).

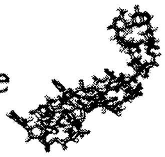
The second noble gas discovered, - argon - was found by John William Strutt (the 3rd Lord Raleigh) and William Ramsay, when they discovered that in reacting nitrogen with magnesium, not all of the nitrogen was absorbed. This led to an analysis of the spectrum and new red and green bands. Their conclusion was that a new, inert gas accounted for this and they named the new element argon (Gr. Argos, lazy) in 1894. Ultimately, this led to the addition of a new group to the periodic table as well as the subsequent discovery of neon and krypton.

Helium is the 2nd most abundant element in the universe and its boiling point is quite close to absolute zero (--268.9°C). Vast reserves of helium are found underground near Amarillo, Texas! In addition to its obvious use as a birthday balloon filler, helium is also used in breathing mixtures for scuba diving because of its low solubility in blood.

Argon is used widely in light bulbs and fluorescent tubes as well as an inert gas for welding. *You can get a cool noble gases T-shirt at www.retroduck.com!*

SWRM Houston

by Roxie Allen

Nano Scale  Giga Vision

62nd SouthWest Regional Meeting

of the American Chemical Society

Houston, Texas October 19-22, 2006

Held at: Houston Westchase Marriott

Registration can be done online:
http://www.chem.uh.edu/swrm06/
$65 for registration + $30 for the Saturday luncheon

Saturday Luncheon featuring
Chemthusiasm
a chemistry circus by Jeff Hepburn

PreCollege Sessions – Friday (pm) and Saturday (all day)
Elementary School to High School
Kids and Chemistry (preregistration required)
Exploring Chemistry
Chemistry in the Elementary Classroom? You Bet!
Teaching High School Chemistry with Toys
Reactions, Reactions, Reactions
Using Historical Aspects to Enhance the Chemistry Classroom
That's Eggstraordinary
Bananas, Nuts and Nuclear Radiation
TI 84+ with Easy Data™, Easy Link™, and Easy Temp™ in the Chemistry Classroom and Laboratory
TI 84+ and Lab PRO Training Session
And Many More!

This is a great opportunity for you Houston area folks If you aren't going to be able to make CAST in Wichita Falls!

Advanced Placement Changes

by js

If you teach AP Chemistry (or any AP course) you should be aware that the College Board is carrying out a course audit. The purpose of the audit is to determine if courses being offered in high school actually do meet the guidelines in the Acorn book and are truly "AP" courses. Each AP teacher will be required to prepare a course syllabus and the teacher will submit his/her syllabus along with other audit materials from her/his administration to the College Board by June 1, 2007. Guidelines for syllabi as well as additional information regarding the audit, as well as updates throughout the fall semester, can be found online at http://apcentral.collegeboard.com/courseaudit.

Another change in the AP program is a redesign of the AP Chemistry course which is intended to ensure that teachers are able to teach a reasonable number of topics to sufficient depth as well as promoting a strong laboratory component and fostering inquiry. This redesign is still in its infancy; however, the redesign is not expected to affect the course and its exam until 2010.

Some changes to the AP Chemistry exam format will begin with the administration of the May 2007 exam. The new free response exam format (as laid out on http://apcentral.collegeboard.com) is as follows:

2007 Free Response Format

PART A (55 minutes) *with calculator*	% of F.R. Score	**PART B** (40 minutes) *no calculator*	% of F. R. Score
Equilibrium problem	20%	Reactions question (3 required)	10%
Other problem	20%	Essay question	15%
Other problem*	20%	Essay question*	15%

**One of the other problems or essays will be laboratory-based*

The most noticeable differences in the format are in the fact that all questions are now required – no more choices for students to make! Also, there is a greater emphasis on the quantitative questions rather than the essay portion. Note that laboratory-based skills will still be assessed either as a problem or an essay.

Finally the structure of the reactions section has changed substantially. The new directions will be stated something like: "For each of the following reactions, in part (i) write a BALANCED equation and in part (ii) answer the question about the reaction. In part (i), coefficients must be in terms of lowest whole numbers. Assume that solutions are aqueous unless otherwise indicated. Represent substances as ions if the substances are extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction."

Example: *A strip of magnesium is added to a solution of silver nitrate*

(i) $Mg + 2\,Ag^+ \rightarrow Mg^{2+} + 2\,Ag$

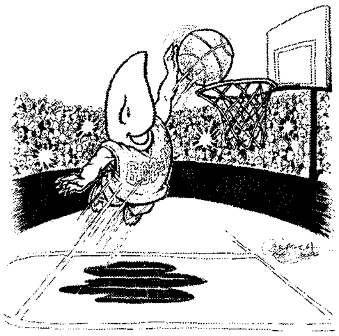
(ii) *Which substance is oxidized in the reaction?* Answer: magnesium

How the question is going to be scored is evidently still being debated although the thoughts on the AP list serve predict something like: 1 point reactants, 2 points products, 1 point balancing, 1 point question. Also, what the questions will cover are also in hot debate. My prediction (for whatever that's worth) is that some of the questions will incorporate descriptive chemistry (colors of ions, gases produced, pH changes, names of precipitates) as well as redox concepts. I'm sure that many of us will be working on modifying our current reaction sets to help our students prepare. Perhaps by next summer at ChemEd, we can have a trading post and share what we've come up with. By the way, there are 8 other reaction examples shown on apcentral – check 'em out.

Mole Madness! Mole Day 2006

by js

October 23
6:02 am to 6:02 pm



You don't need to wait for March for the madness to begin. That's right you can start (w)hoopin' it up in October with this year's Mole Day Theme "Mole Madness."

I thought that Mole Day with a basketball theme cried out for some sort of physical activity so here are some possibilities:

- Indoor basketmole—get some stuffed moles, a trashcan or fashion a hoop with a coat hanger. Set up your class in a single elimination tournament with 3 throws per round. You can even set up the final Sweet Sixteen bracket to declare the Molechael Jordan for your classroom! (Depending on how the moles fall, it might also provide an opportunity to review the concepts of accuracy and precision.)
- Measure the circumference of a basketball with string. Use your data and the diameter of a carbon atom (140 pm from www.webelements.com) to calculate how many atoms could line up along the basketball's circumference.
- Have student run a relay with events like dribbling a basketball 6.02 feet, turning in a circle 6.02 times while your forehead is touching a baseball bat, shooting a basketball from 6.02 different positions (sort of playing horse—but it's mole!)

Decoration Idea: search the web for pictures of Molechael Jordan, Cuttino Molebly, Molechael Finley, Molebe Bryant, Karl Moleone and especially the Molevericks. Cut out their heads and paste them onto a mole drawing to decorate your room.

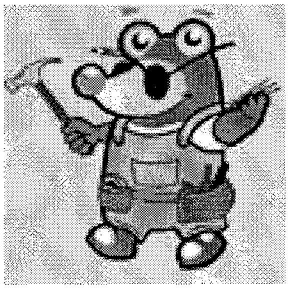
Visit the National Mole Day Foundation website **http://www.moleday.org** for great ideas for mole day projects as well as an abundance of corny mole day jokes. They also have some fun items for purchase.

The Cavendish Science Organization **http://cavendishscience.org/index.htm** has a really fun mole page in addition to its physics demos and Hershel's discovery of infrared wavelengths of light—check it out!

I think this year's mole day artist is a Wisconsin Fan.

National Chemistry Week

by js



Your Home—It's All Built on Chemistry!

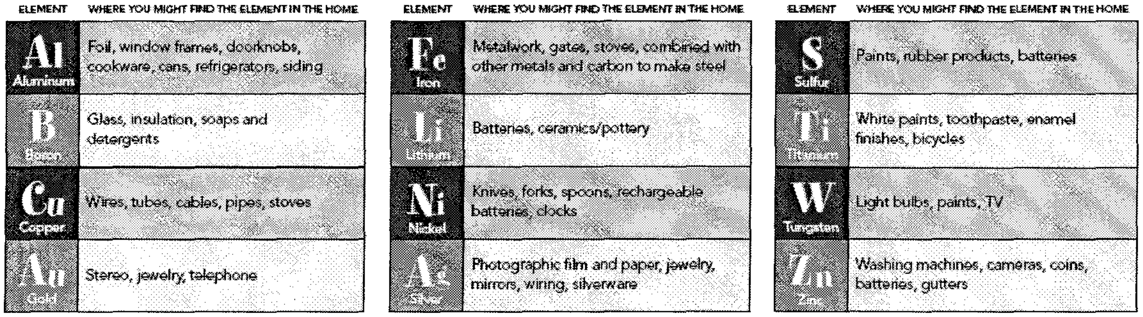
Celebrate October 22—28,

The intent of this year's theme is to focus on materials used in building homes, recyling and conservation and home safety and preparedness. If you visit the American Chemical Society's National Chemistry Week site www.chemistry.org/ncw you can download a copy of "Celebrating Chemistry.' Although this publication is intended for an elementary to middle school audience, it has some great ideas for high school chemisty as well. Pages 6 and 7 explore materials used in four areas of a typical household; that information could be turned into a quick webquest or puzzle.

For example, incorporating polymers is always a great topic and with this theme you can incorporate cellulose—the polymer that makes up wood—nylon and other synthetic polymers which are used in carpet—polyvinyl chloride (PVC) which is used in plumbing as well as siding and flooring. You could also incorporate a quick lesson on the 6 types of recyclable polymers and their uses. Visit http://www.plasticsresource.com for more information.

Metals, glass and concrete are also possible materials to explore that are used widely in the home. "Celebrating Chemistry" also has a quick lab investigation on insulating materials—perhaps it could be incorporated into a TAKS lesson on conduction, convection and radiation.

A nice graphic, shown below, presents elements and where they are found in the home.



ELEMENT	WHERE YOU MIGHT FIND THE ELEMENT IN THE HOME	ELEMENT	WHERE YOU MIGHT FIND THE ELEMENT IN THE HOME	ELEMENT	WHERE YOU MIGHT FIND THE ELEMENT IN THE HOME
Al Aluminum	Foil, window frames, doorknobs, cookware, cans, refrigerators, siding	Fe Iron	Metalwork, gates, stoves, combined with other metals and carbon to make steel	S Sulfur	Paints, rubber products, batteries
B Boron	Glass, insulation, soaps and detergents	Li Lithium	Batteries, ceramics/pottery	Ti Titanium	White paints, toothpaste, enamel finishes, bicycles
Cu Copper	Wires, tubes, cables, pipes, stoves	Ni Nickel	Knives, forks, spoons, rechargeable batteries, clocks	W Tungsten	Light bulbs, paints, TV
Au Gold	Stereo, jewelry, telephone	Ag Silver	Photographic film and paper, jewelry, mirrors, wiring, silverware	Zn Zinc	Washing machines, cameras, coins, batteries, gutters

Finally, especially younger kids, can use this as an opportunity to review safety procedures in their homes. The family could even prepare an emergency survival kit together.

HOME
SAFETY
COUNCIL

Additional materials are available from the Home Safety Council

http://www.homesafetycouncil.org/index.aspx

Fall in Step in Science

by js

CAST is a little later this year—we'll be in Wichita Falls from November 9—11.

So get your boots polished, your jeans starched and shuffle on up for some science fun!

The conference website is http://www.statweb.org/CASTWF/index.html

Online registration should be up— register before October 9th to get the advance registration rate of $90. (You can print off a registration form and mail or FAX it in now, but you will have to pay an additional $10 handling fee.) Short Course and Field Trip information can be accessed online and added to your registration until November 3rd. Although workshop titles are not yet posted on the web, they should be added soon. Luncheon tickets have to be done on a separate registration—be patient.

ACT$_2$ will be ever-present in the exhibit area (Booths #1017 and 1019), for the Friday Day of Chemistry and of course, Saturday's luncheon (buy your $12 ticket with your registration!) with our guest speaker Rhonda Reist from Olathe, Kansas.

Workshops have been organized around the following strands:

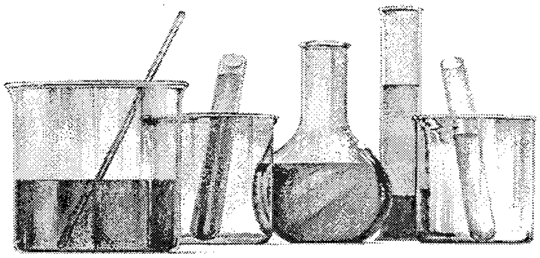
- Preservice Science Education
- Differentiated Instruction
- Science and the Arts
- Early Childhood and Elementary Science Teaching
- The "T" Words: TAKS, TEKS, Teaching, Testing and Technology

Be sure you register for the FREE (1st 1500 tickets only) social event on Friday night.
A full barbeque dinner with all of the fixing's!!

If you want to stay for the "Wild West Rodeo" you will have to pay $15 for the privilege.

(might be worth it to see Chris Comer from TEA toss a cow chip!)

by Roxie Allen



ACT$_2$ Presents

The Fifth Annual Day of Chemistry
Friday, November 10, 2006

Bolin Science Hall **Room 209**	**Bolin Science Hall** **Room 213**
8:00 Electrochemistry For Everyone Kim Pamplin	**8:00 Graphs and More Graphs** Todd Abronowitz
9:30 Reactions, Reactions, Reactions Jennifer Kuhl and Roxie Allen	**9:30 Titrations Made Easy** Rhonda Alexander
1:00 ChemNet: Conversations and Networking ACT$_2$ Chemistry Teachers	**1:00 That's Eggstraordinary** Amiee Modic and Jane Gray
2:30 Nice and Easy Demos Melissa Jones	**2:30 Demos? What a Rush** Rhonda Reist
4:00 Safety is My Middle Name Rosendo Garcia	**4:00 Science in a Shoebox** Jane Smith, Karen Compton and Claudia Wallace

Lone Star Solutions

UNIVERSITY of NORTH TEXAS

ChemEd

2007

July 29-August 2

Is your name on the ChemEd 07 listserve?
Shouldn't it be so you can find out the latest news about ChemEd 07??

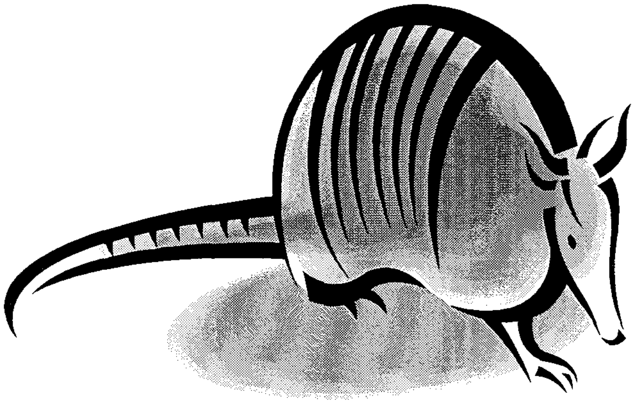
Check it out—today!
www.chem.unt.edu/chemed07

Come to ChemEd 07 to:

- Hear keynote speakers
- Participate in hands-on workshops
- See presentations and demonstrations for sharing practices
- Learn strategies for improving the quality of education in the classroom
- Meet over 1000 teachers from across the United States and approximately 50 countries
- Seize the opportunity to network with colleagues
- Exchange ideas and grow professionally

We've set up the fun:
Ice Cream Social, Watermelon Social, Mole Fun Run, Mole Day Breakfast and a great western barbeque with lots of activities and fireworks at the Circle R Ranch

We've lined up the field trips:
Behind the scenes at the Dallas Museum of Art, Alcon, Miller Brewery, Mrs. Baird's Bakery, Comanche Peak Nuclear Power Plant and many, many more



We're finalizing speakers and now it's time for you to think about your commitment to sharing your best classroom ideas.

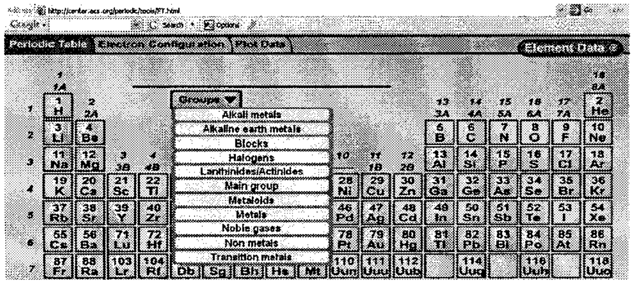
Workshop submissions should be online in a couple of weeks—check back
Registration is up now!

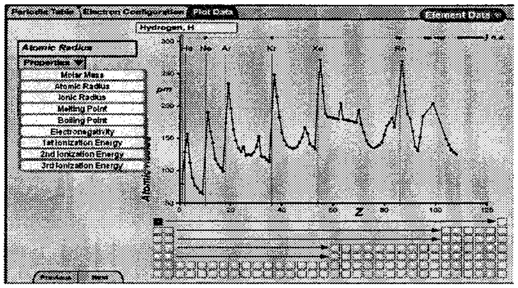
Web Delights

by js

The American Chemical Society has put a new periodic table on the web. Not only does it have nice information on each element as a pop-up, but it also will show color coded special families, regions and s p d f blocks with one click. You can also plot data for a variety of periodic properties and look at orbital diagrams for every element on the periodic table. If you have a computer lab or your students will utilize their internet at home, this site could provide a very nice introduction to the periodic table and periodic trends.

The site is http://center.acs.org/periodic/tools/PT.html





◆

One of my favorite website to use in the classroom is the Norton Publishing site for *Chemistry in Context*. Many chapters have animated tutorials that can accompany a power point or be assigned as homework. I find that my students are more likely to look at and play around with a website than they are to crack a book, so I try to find and share useful sites with them whenever I can.

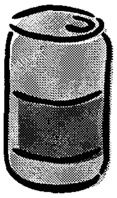
Some of the information is beyond what I teach in first year chemistry and sometimes even AP, but check out dimensional analysis, significant figures and scientific notation in Chapter 1 for your students who need some extra help. You do need the Flash 6 plugin to view the animations.

The site is http://www.wwnorton.com/chemistry/home.htm

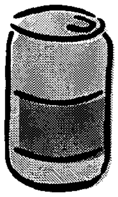
◆

Ian Guch, a Chemistry teacher in Alexandria, Virginia, is an amazingly generous man. If you visit his website http://misterguch.brinkster.net/chemfiestanew.html you will be able to experience his "Cavalcade o' Chemistry." Although he would love it if you purchased one of his commercially published books like The Complete Idiots Guide to Chemistry, both new and veteran teachers will find a lot of enticing items amongst his plethora of FREE offerings in the "For Teachers" section. He also has some nice tips, especially for new teachers, like:

- Throw away the first and last page of a new ream of paper before loading the copier—they often have excess glue and can jam the copier.
- Be kind and respectful to secretaries, aides, and custodians—they can be your best allies or your worst enemies.
- When you talk to a parent be sure you document the date, time, topics you discussed and any conclusions you reached so you can refer back if any questions arise.
- Wash your hands frequently—especially when grading papers!



Coke Can Lab



Show all work. Be sure to include an uncertain digit in all of your measurements. Use the proper number of significant figures in all calculations.

Measure and record the mass of the FULL Coke can. MASS = ________________

Measure and record the mass of an EMPTY Coke can. MASS = ________________

Return to your desk for the remaining data and calculations. You will need to take the EMPTY Coke can with you. Pick up a ruler on your way...

Measure and record the maximum diameter (NOT at the top indented part) of the can.

DIAMETER = ________________

Calculate the maximum radius of the can. radius =________________

Measure and record the height of the can. HEIGHT =________________

Calculate the volume of the full can of Coke. volume =________________
($\pi = 3.14$)

How can you account for the difference between the volume printed on the outside of the can (which is __________ mL) and the volume you just calculated?

Find the UPC zebra stripes bar code on the can and write the code number in scientific notation using 4 significant digits. Code = ________________ = ________________

Look on the ingredient label which indicates the presence of sodium in milligrams. Convert the amount of milligrams of sodium per serving to grams of sodium and express the sodium answer in scientific notation. Mass of sodium = ________________

The contents of each can are expressed in fluid ounces "FL OZ" and milliliters. How many milliliters are equal to 1 fluid ounce? 1 FL OZ = ______________mL

Calculate how many fluid ounces would be present if a larger-sized Coke can contained 500. mL.
_____________FL OZ

Calculate the mass of the liquid which was in the Coke can.
Mass of Coke = ________________

Calculate the density of the **liquid** which was in the Coke can. (Think about what volume and mass you should use in your calculation.)

Density of **liquid** Coke = ________________

Calculate the density of the **full** Coke can. (Again, think about what volume and mass you should use in your calculation.)

Density of **full can** of Coke = ________________

How do you account for the difference between the two densities?

The density of gasoline is 0.67 g/mL, the density of water is 1.00 g/mL and the density of ethanol is 0.79 g/mL. Assuming they don't mix, draw an aquarium tank and label what it would look like if you poured some of each of the three liquids in, as well as a full can of Coke.

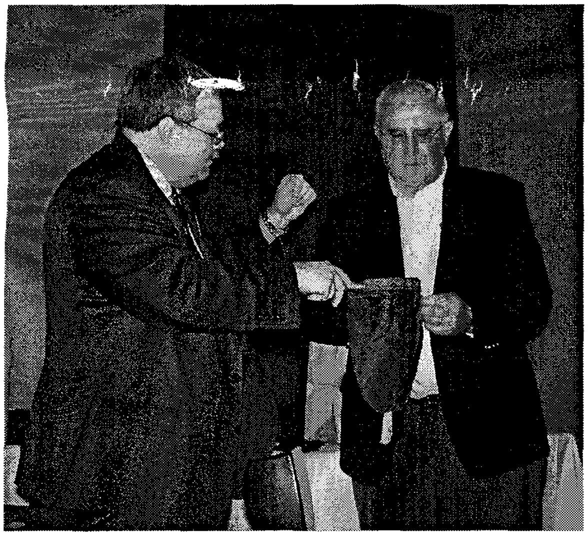
Dr. Larry Peck's Retirement Party

By Vickie
Williamson
TAMU

In early April, the retirement of Dr. Larry Peck was honored with a two-day chemical education symposium and banquet. On Thursday, April 5th, the initial activity was a speech from Dr. Ann Nalley, the president of the American Chemical Society. On Friday, April 6th, Dr. Mike Abraham (University of Oklahoma), Dr. Ron Archer (University of Massachusetts), and Dr. Jim Birk (Arizona State University) presented a series of lectures on the growth of chemical education and chemical education research. The symposium was concluded with a banquet in honor of Dr. Peck's career and his work with high school teachers.

The banquet featured demonstrations by Jeff Hepburn, a master high school teacher; a video presentation of a news report that aired on Denver TV featuring Steve Spangler performing Dr. Peck's famous rusty ball/thermite demonstration; and a multi-media presentation highlighting a few special moments from Dr. Peck's career. At the banquet Dr. Peck also received a number of mementos, including a memory book of messages from those who could not attend and an Honorary Lifetime Membership to the Associated Chemistry Teachers of Texas (ACT_2) presented by Roxie Allen in honor of his many contributions to the field of Chemical Education.

We wish the best to Dr. Peck, who has relocated and is now busy fishing in Lewiston, Idaho.



For once, Larry gets to be
the abled assistant
to Jeff Hepburns's
Chemical Magic Trick.

Roxie speaks for us all in
thanking Dr. Peck for his
tireless devotion to high
school chemistry teachers.

ACT 2

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